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Enclosure 1

California Regional Water Quality Control Board

North Coast Region



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Interoffice Memorandum

Date: September 10, 2002

To: Diana Henrioulle-Henry, PE
Senior WRCE, Headwaters Unit

From: David Kuszmar
WRCE, Headwaters Unit

Re: Staff's Review of PALCO's THP 201 MRP QA/QC Program

Introduction

As you requested, staff have reviewed the Quality Assurance/Quality Control (QA/QC) Program document submitted by the Pacific Lumber Company (PALCO) for the Monitoring and Reporting Program (MRP) associated with Timber Harvesting Plan 1-01-201 HUM (THP 201). Per the requirements of the MRP, the Program document was submitted to the Regional Water Board via email on July 16, 2002 for the Executive Officer's Approval. This memorandum summarizes staff's findings regarding the adequacy of the QA/QC Program and contains recommendations for timely improvements to the Program so as to warrant approval by the Executive Officer.

Overall, while the QA/QC Program has favorable attributes, PALCO will need to make significant changes and improvements to the Program in order to ensure that activities conducted under the THP 201 MRP will meet stated objectives and yield reliable, useful data. In general, the needed changes and improvements may be placed into two major categories: 1) technical content and detail, and 2) organization and format. For the sake of efficiency, this memorandum defers specific, detailed discussions of all the needed changes and improvements for future, direct communication with PALCO and/or its consultant.

MRP Requirements

The MRP includes, in part, the following requirements for the QA/QC Program:

"PALCO will develop a comprehensive QA/QC Program for the monitoring activities to be implemented. The QA/QC Program will address all aspects of the monitoring program and will contain, at a minimum, but not be limited to:

- a. Standard procedures for the establishment of repeatable sampling locations;
- b. Standard operating procedures for each field method and piece of equipment used;
- c. Standard operating procedures for each laboratory method and piece of equipment used;
- d. Standard reporting procedures;
- e. Measures for quality assurance associated with monitoring and reporting procedures;
- f. Measures for quality control associated with monitoring and reporting procedures;
- g. A training program for personnel conducting monitoring activities; and,

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h. Measures for adapting the QA/QC Program, when necessary.”

PALCO appears to have used guidance available from the United States Environmental Protection Agency (EPA)¹ to develop the QA/QC Program. Upon review of the Program document, staff believe that this is a good approach and that conforming to EPA guidelines for quality assurance will be an appropriate way to satisfy each of the above requirements. However, as previously mentioned and further explained in the remainder of this memorandum, PALCO will need to make significant changes and improvements in order to be consistent with EPA guidelines, and thus to develop a Program that is suitable for the Executive Officer's approval.

Favorable Attributes of the QA/QC Program

The following bulleted items highlight the favorable attributes of the QA/QC Program:

- As noted above, though not specifically referenced, the Program format appears to conform to quality assurance guidelines available from the EPA.
- The Program relies in large part on protocols and methodologies accepted by the United States Geologic Survey (USGS) and the United States Department of Agriculture (USDA) Forest Service as the basis for standard operating procedures.
- The Program document is written and presented in a professional manner.
- The Program document was submitted approximately on time, according to the deadline specified in the MRP (July 15, 2002).

Technical Deficiencies

The following comments highlight the general deficiencies in and needed improvements to the QA/QC Program related to technical content and detail:

Data Quality Objectives

Specific Data Quality Objectives (DQOs) and the intended use of performance criteria (e.g., precision, accuracy, completeness, representativeness and comparability) for the Program are not provided in sufficient clarity and detail to allow for an adequate quality assessment of the MRP once data have been collected and analyzed. The quality assessment component of a QA/QC Program is crucial for data users, as it provides them with a measure of the usability of previously collected data and the need for improvements to the MRP to increase the usability of future data to be collected.

Suggested Action: The Program document should identify DQOs specific to the MRP according to EPA guidance² and should specify how quality assessments under the Program shall be performed and reported³.

¹ Refer to 1998 *Guidance for Quality Assurance Project Plans* (EPA QA/G-5). Available online at: <http://www.epa.gov/quality/>

² Refer to 2000 *Guidance for the Data Quality Objectives Process* (EPA QA/G-4). Available online at: <http://www.epa.gov/quality/>

³ Refer to 2000 *Guidance for Data Quality Assessment* (EPA QA/G-9). Available online at: <http://www.epa.gov/quality/>



Quality Assurance and Quality Control Measures

A comprehensive suite of specific quality assurance and quality control measures has not been established for the QA/QC Program and described in sufficient detail in the Program document. The goal of selecting multiple specific measures and incorporating them into the Program is to provide a high degree of certainty that activities conducted under the MRP will meet stated monitoring and data quality objectives and yield reliable, useful data.

Suggested Action: A suite of specific quality assurance and quality control measures should be selected and incorporated into the Program according to EPA guidance (see footnote 1). All measures should be described in detail in the Program document.

Standard Operating Procedures

Standard Operating Procedures (SOPs) for all field and laboratory methods and for each piece of equipment used are not included in the Program document. In some cases, specifications for certain procedures are provided within the body of the Program document. Otherwise, in lieu of specific SOPs, general references to standard methods (e.g., Techniques of Water Resources Investigations of the USGS) are provided. Specific SOPs are preferred over general references to standard methods. Overall, SOPs have not been developed that are specific to the requirements of the MRP and the Program document does not provide a comprehensive set of SOPs to its users.

Suggested Action: Guidance available from the EPA⁴ should be followed to develop SOPs specific to the requirements of the MRP. The SOPs should be provided in a separate appendix to the Program document.

Data Analysis Methods

Methods for data analysis, especially related to triggers for hillslope inspections, are discussed in little to no detail in the Program document.

Suggested Action: SOPs specific to MRP data analysis requirements should be developed using standard statistical techniques and guidance available from the EPA (see footnote 3) and others.

Hillslope Monitoring Methods

Suggested SOPs for hillslope inspections do not satisfy specific requirements for hillslope monitoring set forth in the MRP, which states:

“Hillslope monitoring... and watercourse crossing monitoring... will include, but not be limited to, mapping, photographing, and describing in a written log all sediment sources at monitoring locations that have discharged or have the potential to discharge soils to watercourses or contribute to in-stream turbidity. Sediment sources to be identified will include, but not be limited to, landslides, debris flows, and erosion from hillslopes, stream banks, roads, skid trails, and watercourse crossings. Sediment sources will be identified as having likely been caused by either natural circumstances or anthropogenic activities. All hillslope inspections... and watercourse crossing monitoring... will specifically identify and describe any new sediment source(s) or change(s) in the conditions of the sediment source(s) documented previously during hillslope and/or watercourse crossing inspections.”

⁴ Refer to 2001 *Guidance for Preparing Standard Operating Procedures* (EPA QA/G-6). Available online at: <http://www.epa.gov/quality/>



Regional Water Board staff recognize that the suggested SOPs for hillslope inspections under the MRP are essentially identical to PALCO's current property-wide hillslope monitoring efforts, which are conducted voluntarily by PALCO for its internal use. The operating procedures for these efforts are not applicable to the requirements of the MRP as stated, in part, above.

Suggested Action: SOPs specific to MRP requirements for hillslope and watercourse crossing inspections should be developed and included in the Program.

Hillslope Monitoring Locations

References to hillslope monitoring locations in the Program document are not consistent with the locations specified in the MRP. SOPs provided for hillslope inspections suggest that only areas within the plan boundaries of THP 201 will be subject to hillslope monitoring (i.e., roads within harvest unit boundaries, buffers around watercourses, and harvest areas). However, the MRP specifies the following (emphasis added):

"Hillslope monitoring locations will include *the entire drainage area above the sampling location(s)*... [WQ-A, WQ-B and WQ-C]... including the harvest units, roads, skid trails and watercourses associated with THP 201."

In order to meet the monitoring objectives for which the MRP was originally designed, hillslope monitoring locations must include the entire drainage areas above sampling locations WQ-A, WQ-B and WQ-C, as specified in the MRP.

Suggested Action: References to hillslope monitoring in the Program document should be revised to reflect the full extent of hillslope monitoring locations specified in the MRP.

Organizational Deficiencies

The following comments highlight the general deficiencies in and needed improvements to the QA/QC Program related to program organization and document format:

Program Content

While the Program format appears to follow guidance available from the EPA (see footnote 1), the Program content is not consistent with such guidance.

Suggested Action: The Program should be re-developed following the EPA's suggested format and content as closely as possible.

Monitoring Objectives

The stated objectives of the MRP are obscured within the greater text of the Program document and are not the same as the objectives for which the MRP was originally designed.

Suggested Action: The stated objectives of the MRP should be placed prominently in the Program document, and should read as follows:

- (1) "...To isolate and quantify increases in turbidity resulting from activities conducted under THP 201," and
- (2) "...To direct timely sediment source identification and subsequent remedial action."

Other potential uses of the data to be collected under the MRP may also be identified, as appropriate.



Recommendations

Based on staff's review of PALCO's QA/QC Program document for the THP 201 MRP described herein, I offer the following recommendations for your consideration:

- (1) In order to be acceptable for the approval of the Executive Officer's approval, the QA/QC Program should be redesigned, and the Program document should be redrafted to resolve the general deficiencies described above, according to the suggested actions and additional guidance provided in this memorandum.
- (2) Regional Board staff should be consulted immediately to provide further and direct assistance to PALCO and/or its consultant in order to develop an adequate QA/QC Program.

I trust that the information provided herein is helpful toward the development of an adequate QA/QC Program for the THP 201 MRP and the ultimate success of the monitoring and reporting activities to be conducted. As previously stated, for the sake of efficiency, this memorandum defers specific, detailed discussions regarding all the needed changes and improvements to the QA/QC Program for future, direct communication with PALCO and/or its consultant. Please feel free to contact me with any further questions or needed clarification.

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cc: Nathan Quarles, PE
Chief, Timber Harvest Division

